INFECTION CONTROL FOR DENTISTRY

09/04

The purpose of this briefing is for informational purposes only. State and/or local requirements may be more stringent than information contained in this briefing. Users should investigate state and local requirements that may apply.

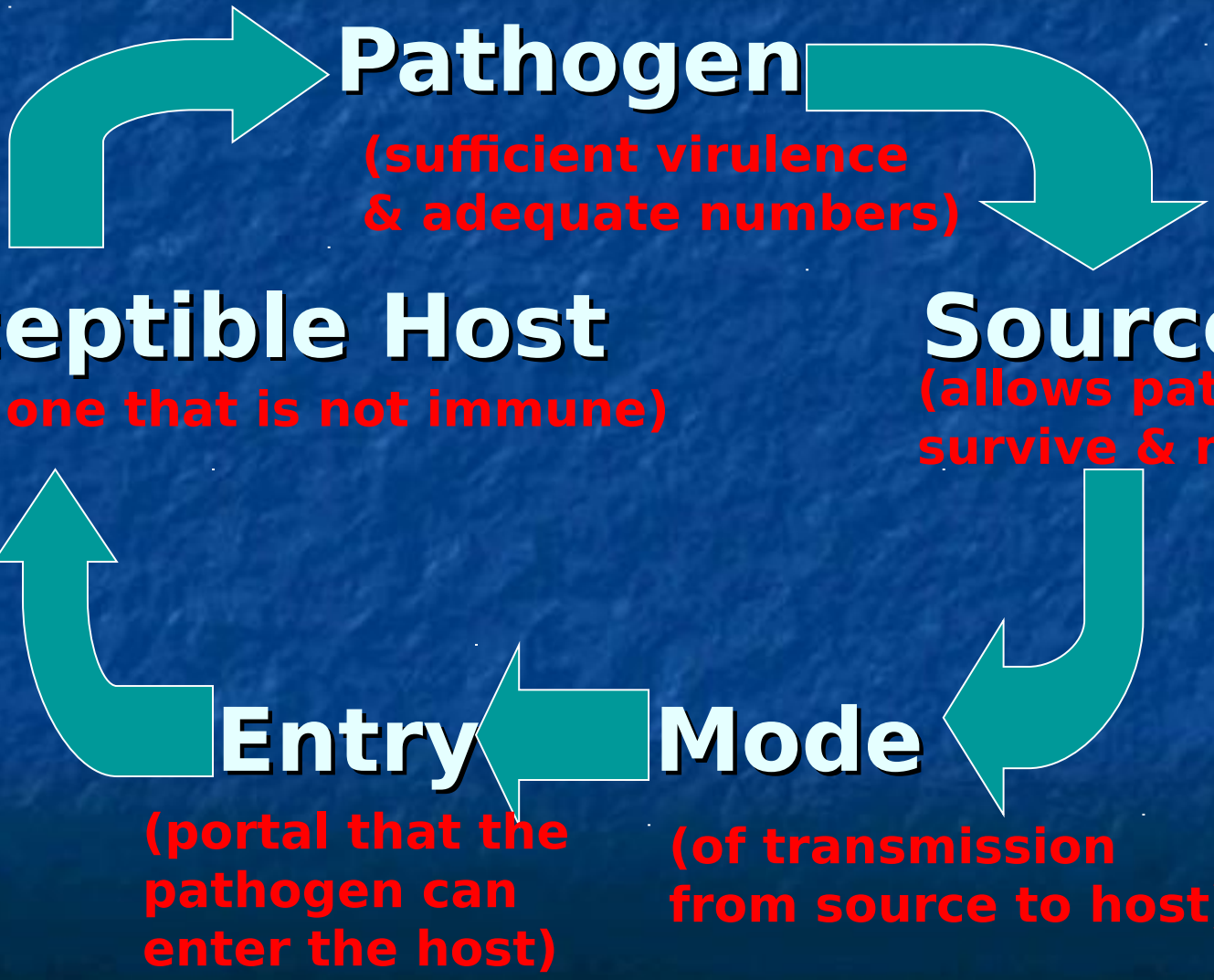
Abbreviations

- DHCP – Dental Health-Care Personnel
- EPA – Environmental Protection Agency
- FDA – Food and Drug Administration
- HBV – Hepatitis B Virus
- IC – Infection Control
- ICC/ICRF – Infection Control Committee/Review Function
- OPIM – Other Potentially Infectious Materials
- MTF – Medical Treatment Facility
- PPE – Personal Protective Equipment

Why Is Infection Control Important in Dentistry?

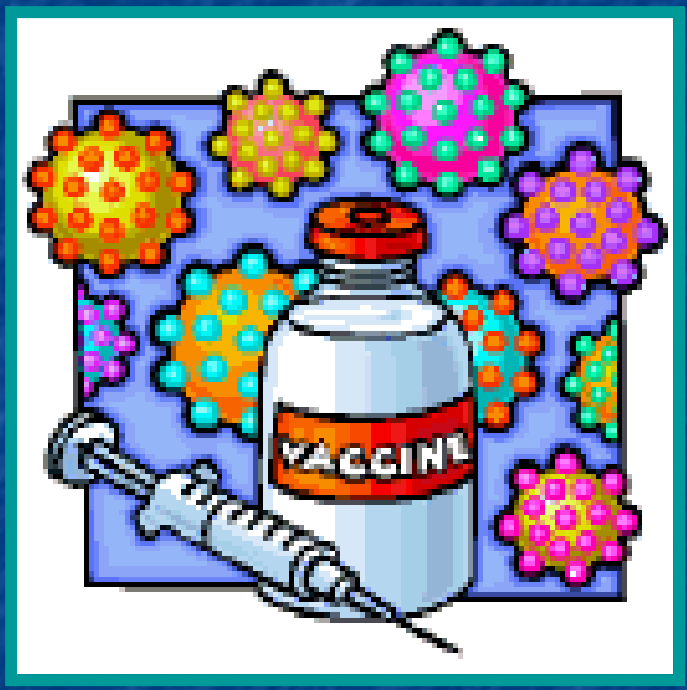
- Both patients and dental personnel can be exposed to pathogens
- Contact with blood, oral and respiratory secretions, and contaminated equipment occurs
- Proper procedures can prevent transmission of infections to patients and DHCP

Goal is to Break the Chain of Infection



Immunizations

- Substantially reduce the potential for disease transmission to DHCP & patients
- Essential part of prevention & IC programs
  - Varicella
  - Measles
  - Mumps
  - Rubella
  - Influenza
  - Hepatitis B



Work Restrictions

- **Policies should encourage personnel to seek care report their illnesses**
- **Selected diseases & work restrictions:**

Conjunctivitis	Until no discharge
Diarrheal disease	Until symptoms stop
Herpes simplex	Until lesions heal
Measles/rubella	About 1 week
Pertussis	5 days after antibiotics
Strep Group A	24 hours after antibiotics
Varicella	Until lesions crust
Viral respiratory illness	Until symptoms resolve
Shingles/zoster	Cover lesions/crusted

Preventing Transmission of Bloodborne Pathogens

- Standard Precautions
- Engineering Controls
- Work Practice Controls
- Postexposure Management and Prophylaxis

Potential Routes of Transmission of Bloodborne Pathogens

Patient → DHCP

DHCP → Patient

Patient → Patient

Standard Precautions

THE SAME IC PROCEDURES ARE USED FOR ALL PATIENTS

- Assume all patients are potentially infectious
- Infection control policies are determined by the procedure, not the patient

CDC
SAFER • HEALTHIER • PEOPLE™

Expanded or Transmission Based Precautions

- Used with standard precautions to interrupt the spread of certain pathogens
- Three types

  Airborne (TB)

  Droplet (>5 microns) (Influenza)

  Contact (Herpes)

Immunizations

- 3 dose vaccine
- Check for antibodies 1-2 months after third dose
- Revaccinate DHCP who do not develop adequate antibody response
- Booster does of vaccine and periodic serologic testing to monitor antibody concentration after completion of the vaccine series are not recommended for vaccine responders

Hepatitis B Vaccine

Safe

Effective

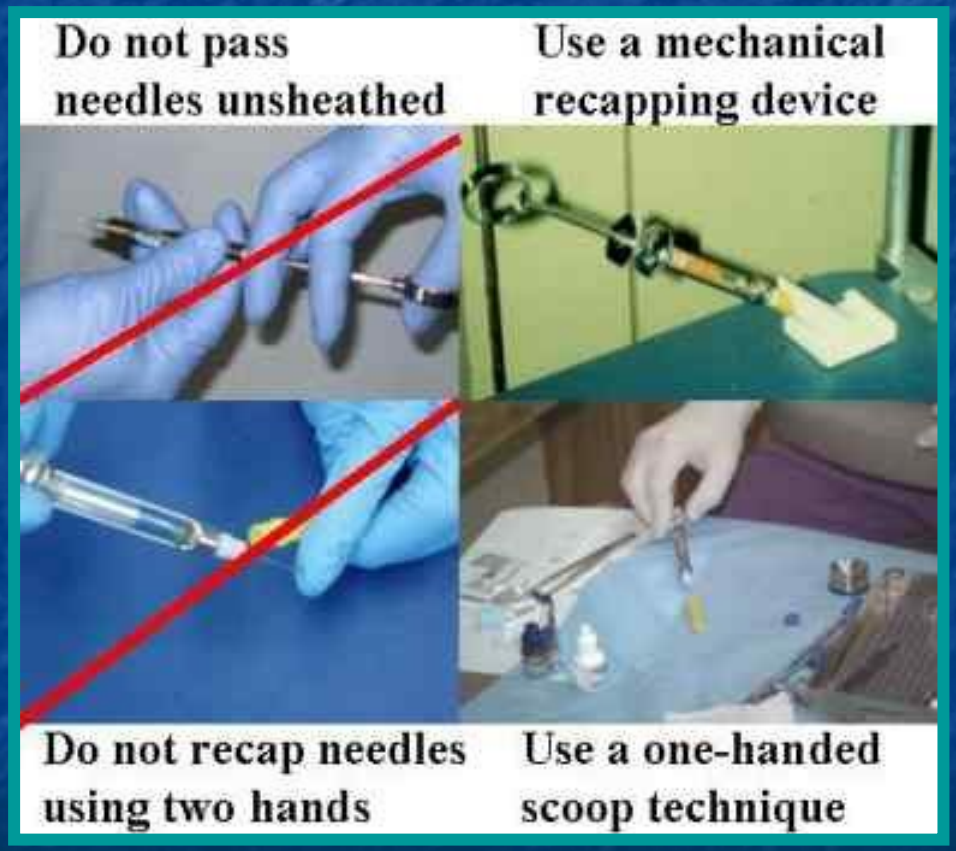
Long - lasting

Engineering Controls

- Controls that isolate or remove the bloodborne pathogens hazard from the workplace
- Commonly used in combination with work practice controls and PPE to prevent exposure

Work Practice Controls

- Practices incorporated into the everyday work routine that reduce the likelihood of exposure by altering the manner in which a task is performed


Do not pass needles unsheathed
Use a mechanical recapping device
Do not recap needles using two hands
Use a one-handed scoop technique

Engineering and Work Practice Controls

- Identify, evaluate, and select devices with engineered safety features as they become available & at least annually
  - Examples:
    - safer anesthetic syringes
    - blunt suture needles
    - retractable scalpels
    - safety IV catheters
- Coordinate with the Regional Tri-Service Product Standardization Board and the MTF ICC/ICRF

OSHA 2001

Occupational Exposure Incident

- Specific eye, mouth, other mucous membrane, non-intact skin or parenteral contact with blood/OPIM (including saliva in dental settings) resulting from performance duties
- Establish procedure for reporting and evaluating exposure incident

Average Risk of Transmission after Percutaneous Exposure to Blood

Source	Risk (%)
HIV	0.3
Hepatitis C	1.8
Hepatitis B (only HBeAg+)	30.0

Postexposure Management
Wound Care

- Clean wounds with soap and water
- Flush mucous membranes with water
- No evidence of benefit for:
  - application of antiseptics or disinfectants
  - squeezing (“milking”) puncture sites
- Avoid use of bleach and other agents caustic to skin

Postexposure Management: The Exposure Report

- Date and time of exposure
- Procedure details…what, where, how, with what device
- Exposure details…route, body substance involved, volume/duration of contact
- Information about source person
- Information about the exposed person
- Exposure management details

Postexposure Management

- Immediate evaluation & follow-up completed by a qualified health-care professional
- After each incident review circumstances surrounding the injury & the postexposure plan
- Provide training to implement changes as needed

Hand Hygiene

- The most important means of preventing disease transmission

Hand Hygiene Indications

- When hands are visibly contaminated
- Before and after treating each patient (e.g., before glove placement and after glove removal)
- After barehanded touching of inanimate objects likely to be contaminated by blood or saliva
- Before regloving after removing gloves that are torn, cut, or punctured
- Before leaving the dental operatory, dental laboratory, or instrument processing area

Hand Hygiene Techniques

- When hands are visibly dirty, contaminated, or soiled
  - non-antimicrobial or antimicrobial soap & water (minimum of 15 seconds)
  - use of liquid soap (vs. bar soap) and hands-free dispensing controls is preferable

Hand Hygiene Techniques

- If hands are not visibly soiled
  - non-antimicrobial or antimicrobial soap & water (minimum of 15 seconds) *or*
  - alcohol-based hand rub (rub hands until dry)

Hand Hygiene Techniques

- **Before an oral surgical procedure:**
  - **antimicrobial soap and water; scrub hands and forearms for length of time recommended by manufacturer (usually 2-6 minutes) *or***
  - **alcohol-based hand rub with persistent activity: Before applying, pre-wash hands & forearms with non-antimicrobial soap; follow manufacturer recommendations**

Skin Care

- Use MTF-approved hand lotions or creams
- Check compatibility with the manufacturer
  - Some lotions may make medicated soaps less effective
  - Some lotions cause breakdown of latex gloves (e.g., petroleum based)
  - Lotions ca[illegible] with bacteria if

Fingernails, Artificial Nails, & Jewelry

- Keep fingernails short with smooth, filed edges to allow thorough cleaning and to prevent glove tears
- Use of artificial fingernails is usually not recommended (Follow MTF policy)
- Do not wear hand or nail jewelry if it makes donning gloves more difficult or compromises the fit and integrity of the glove

Personal Protective Equipment (PPE)

- Protects the skin & mucous membranes of the eyes, nose, and mouth from exposure to blood or OPIM
- Use of PPE is dictated by the exposure risk, not the patient

Masks and Protective Eyewear

- Wear a surgical mask and protective eyewear with solid side shields to protect mucous membranes of the eyes, nose, & mouth
- Change masks between patients, or during treatment if it becomes wet

Masks and Protective Eyewear

- A face shield may substitute for protective eyewear
- Clean protective eyewear with soap & water or if visibly soiled, clean & disinfect between patients

Protective Clothing

- Wear long-sleeved reusable or disposable gowns, clinic jackets, or lab coats to protect skin of the forearms and clothing likely to be soiled with blood, saliva, or OPIM
- Change immediately if visibly soiled

Protective Clothing

- Long-sleeved protective clothing is indicated with
  - Use of handpieces
  - Sonic/ultrasonic scaling
  - Manipulation using sharp cutting instruments (e.g., perio surgeries, prophies)
  - Spraying air and water into a patient's mouth
  - Oral surgical procedures
  - Manual instrument cleaning

Gloves

- Wear when potential exists for contacting blood, saliva, OPIM, or mucous membranes
- Gloves **DO NOT** replace the need for hand hygiene
  - Wash hands before donning gloves and upon glove removal

Gloves

- Do not wash gloves before use or for reuse
- Remove gloves that are cut, torn, or punctured

PPE/Laundry

- Remove all PPE before leaving the work area
- Do not store contaminated clothing or PPE in lockers or offices
- Place contaminated laundry in an appropriately labeled container

Instrument Processing Cleaning

- Minimize exposure potential
- Use carrying containers to transport contaminated instruments from the operatory to the instrument processing area

Instrument Processing Cleaning

- Wear puncture- and chemical-resistant heavy duty utility gloves for instrument cleaning & decontamination procedure
- Wear a mask, protective eyewear, and long-sleeved protective clothing when splashing/spraying is expected during cleaning
- Head/shoe covers may be required by MTF policy

Instrument Processing
Cleaning

- Clean all visible blood and other contamination from dental instruments and devices before sterilization procedures

"Clean it First"

Instrument Processing Cleaning

- Automated equipment is preferable to manual hand scrubbing
- If hand scrubbing is unavoidable, use work practice controls (e.g., long handled brush) & PPE

VS.

Instrument Processing Preparation & Packaging

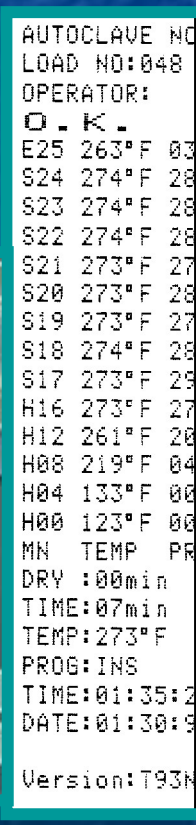
- Before heat sterilization, inspect instruments for cleanliness
- Wrap or place ir packages to maintain sterilit during storage

Instrument Processing
Heat Sterilization

- Use FDA-cleared medical devices
  - Steam autoclave
  - Dry Heat
  - Unsaturated Chemical Vapor
- Do not overload the sterilizer
- Allow packages to dry in the sterilizer before handling

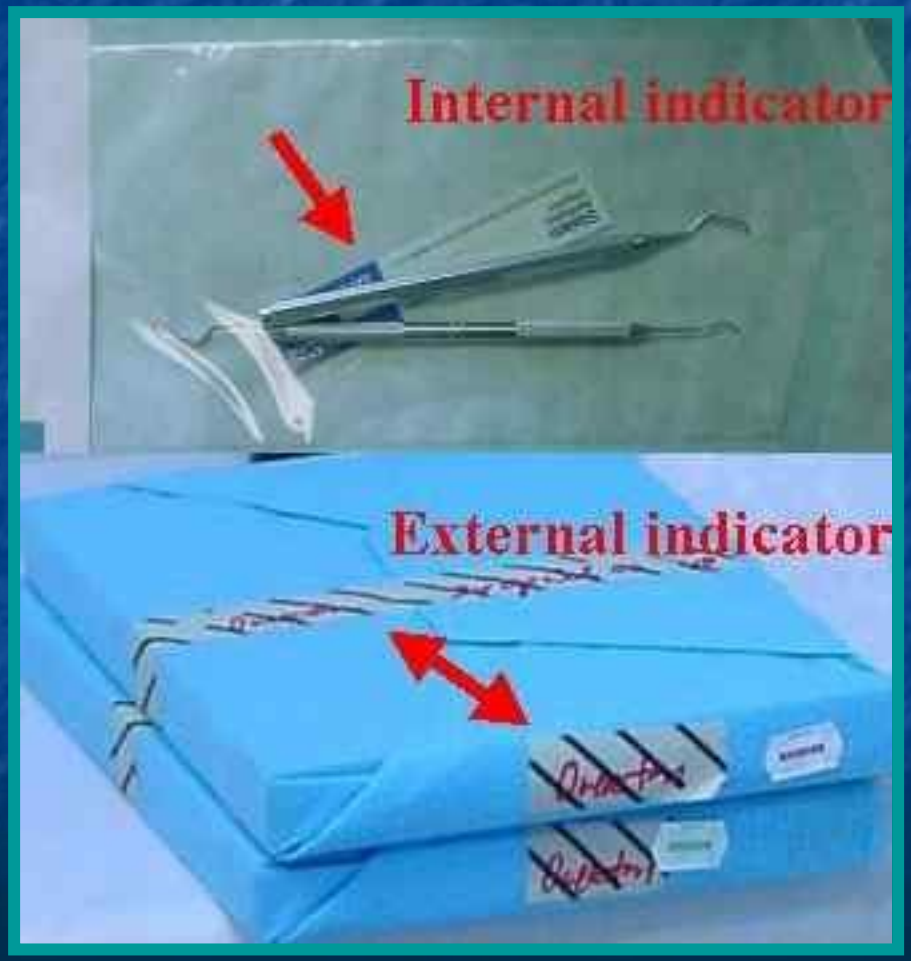
Instrument Processing Sterilization Monitoring

- Monitor each load with mechanical indicators
  - Time
  - Temperature
  - Pressure



Instrument Processing Sterilization Monitoring

- Use an internal chemical indicator in <u>every</u> package. If the internal indicator is not visible from the outside, then use an external indicator
- Inspect indicator(s) after sterilization & at time of use



Instrument Processing Sterilization Monitoring

- **Do not use instrument packs if chemical or mechanical monitoring indicate inadequate processing**

Sterilization Pouch 4½" x 11"
Bar Darkens When Steam Processed
Circle Darkens When Gas Processed
Before sterilization
Sterilization Pouch 4½" x 11"
Bar Darkens When Steam Processed
Circle Darkens When Gas Processed
After sterilization

Instrument Processing Sterilization Monitoring

- Use biological indicators (spore tests) at least weekly or as directed by MTF policy
- Autoclave/chemiclave
  - *Geobacillus stearothermophilus*
- Dry heat
  - *Bacillus atrophaeus*

Instrument Processing Sterilization Monitoring

- Spore test every load if performing flash sterilization or sterilizing implantable devices
- Do not use flash sterilization for reasons of convenience or to save time

Instrument Processing Storage

- **Event-related shelf-life**: a storage practice that recognizes that a package and its contents remain sterile until some event (e.g., the packaging becomes wet or torn) causes the item(s) to become contaminated

- **Time-related shelf-life**: a storage practice where an expiration date is placed on each pac

Expiration date

Date sterilized

Environmental IC

- Follow manufacturer instructions for correct use of EPA-registered hospital disinfecting products
- Use appropriate PPE to protect yourself from the chemicals

Environmental IC

- **Clinical Contact Surfaces**
  - **A surface contaminated from patient materials either by direct spray or spatter generated during dental procedures or by contact with DHCP's gloved hands**

Environmental IC

- Use surface barriers to protect clinical contact surfaces, especially those that are difficult to clean
- Change barriers between patients

Environmental IC

- Clean and disinfect clinical contact surfaces that are not barrier-protected using an EPA-registered intermediate level (tuberculocidal) disinfectant after each patient

Environmental IC

- Clean housekeeping surfaces on a routine basis—depending on nature of surface and contamination & when visibly soiled

Environmental IC Regulated Medical Waste

- Solid waste that is soaked or saturated with blood or saliva (e.g., gauze saturated with blood following surgery)
- Items that are caked with dried blood or OPIM capable of releasing these materials during handling
- Extracted teeth
- Surgically removed hard & soft tissues
- Contaminated sharp items
- Note: definitions may vary according to locality

Dental Unit Water Quality

- Use water that meets standards set by the EPA for drinking water (fewer than 500 CFU/mL of heterotrophic water bacteria) for non-surgical dental treatment output water
- Use sterile solutions for surgical procedures

Dental Unit Water Quality

- **Untreated or unfiltered dental unit waterlines are unlikely to meet drinking water standards**

≠

Measures to Improve Dental Unit Water Quality

- Independent water reservoir system
  - Allows daily draining and air purging if indicated
  - Allows application of periodic &/or continuous chemical germicides
- Water purification cartridges/systems
- Sterile water delivery systems
- Filtration
- COMBINATION OF METHODS

Measures to Improve Dental Unit Water Quality

- Independent reservoir advantages
  - Isolates unit from municipal water supply
  - Choice of water source (allows use of water of known quality-e.g., distilled water)
  - Allows use of waterline treatment products
- Best support in scientific literature when used with waterline treatment products

Dental Unit Water Quality

- Between patients, discharge water and air for a minimum of 20-30 seconds from any dental device connected to the dental water system that enters the patient's mouth (e.g., handpieces, ultrasonic sc r sy

Dental Unit Water Quality

- In-office testing with self-contained test kits
- Water laboratory testing using Method 9215
- Test each unit quarterly or according to manufacturer instructions

Special Considerations

Aseptic Technique for Parenteral Medications

- Use single-dose vials whenever possible
- Cleanse the diaphragm with 70% alcohol before use
- Use a sterile device to enter the vial
- Discard the multidose vial if sterility is compromised

Aseptic Technique for Parenteral Medications

- Do not administer medication from a syringe to multiple patients
- Do not combine leftover contents of medications for later use
- Do not use IV fluid sets for more than one patient

Contact Dermatitis & Latex Hypersensitivity

- Screen all patients for latex allergy
- Develop policies & procedures for evaluation, diagnosis, and management of DHCP with suspected or known occupational contact dermatitis
  - Obtain a definitive diagnosis by a qualified health-care professional (allergist, dermatologist) for any DHCP with suspected latex allergy

Contact Dermatitis & Latex Hypersensitivity

- Provide a latex-safe environment for patients & DHCP with latex allergy
- Have emergency treatment kits with latex-free products available

"latex-safe"

Dental Handpieces

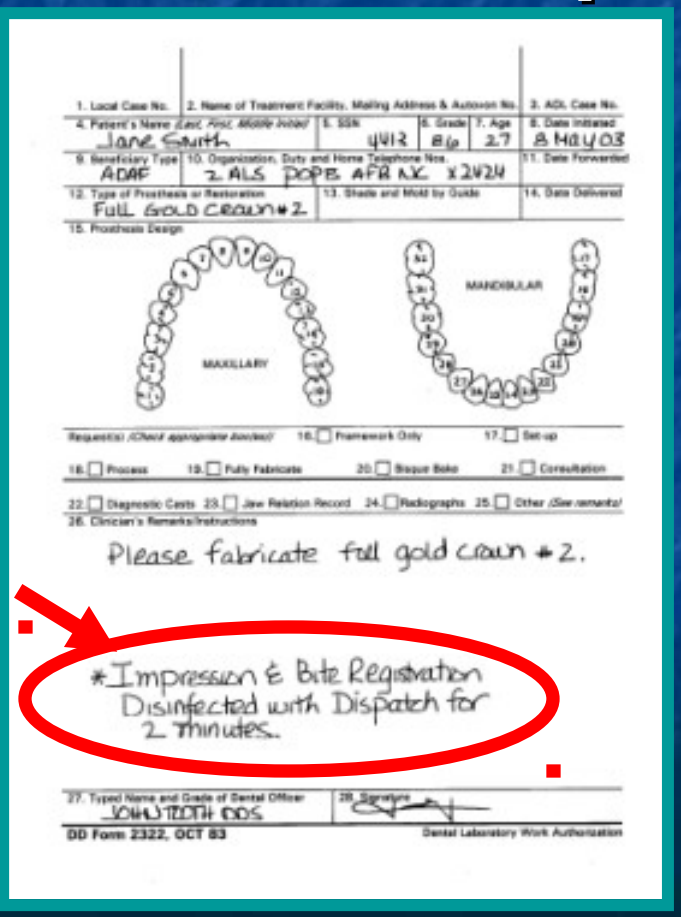
- Clean & heat sterilize all handpieces and other intraoral instruments that can be removed from the air and waterlines of the dental unit between patients

Dental Laboratory

- Standard precautions
- Hand hygiene
- PPE
- Clean and intermediate-level disinfect all laboratory items before being worked on in the lab
- Heat sterilize any items used intraorally or on contaminated appliances

Dental Laboratory

- **Communicate cleaning & disinfection procedures**


1. Local Case No. | 2. Name of Treatment Facility, Mailing Address & Autovon No. | 3. AOL Case No.

4. Patient's Name (Last, First, Middle Initial): Jane South | 5. SSN: 4412 | 6. Grade: E6 | 7. Age: 27 | 8. Date Initiated: 8 Mar 03

9. Beneficiary Type: ADAF | 10. Organization, Duty and Home Telephone Nos.: 2 ALS DOPB AFB NC x2424 | 11. Date Forwarded

12. Type of Prosthesis or Restoration: Full Gold Crown #2 | 13. Shade and Mold by Guide | 14. Date Delivered

15. Prosthesis Design

MAXILLARY

MANDIBULAR

16. ☐ Framework Only 17. ☐ Set-up

18. ☐ Process 19. ☐ Fully Fabricate 20. ☐ Bisque Bake 21. ☐ Consultation

22. ☐ Diagnostic Casts 23. ☐ Jaw Relation Record 24. ☐ Radiographs 25. ☐ Other (See remarks)

26. Clinician's Remarks/Instructions

Please fabricate full gold crown #2.

*Impression & Bite Registration Disinfected with Dispatch for 2 minutes.

27. Typed Name and Grade of Dental Officer: JOHN TEETH DDS | 28. Signature

DD Form 2322, OCT 83 — Dental Laboratory Work Authorization

LAB

PROVIDER

Dental Radiology

- Standard Precautions
- Hand hygiene
- PPE (gloves at a minimum)
- Clean & disinfect equipment or barrier-protect
- Heat sterilize accessories (film holding devices)

Dental Radiology

- Transport and handle exposed radiographs in an aseptic manner to prevent contamination of developing equipment

Digital Imaging
General Considerations

- **Equipment difficult, if not impossible, to clean and disinfect**
- **Barrier-protect clinical contact surfaces**

Digital Radiology Sensors

- Barriers do not always protect the item from potential contamination
  - Since these items are presently not heat-tolerant, at a minimum clean & disinfect with an intermediate level disinfectant after barrier removal

Handling Biopsy Specimens

- During transport, place biopsy specimens in a sturdy, leakproof container labeled with the biohazard symbol

Handling Extracted Teeth

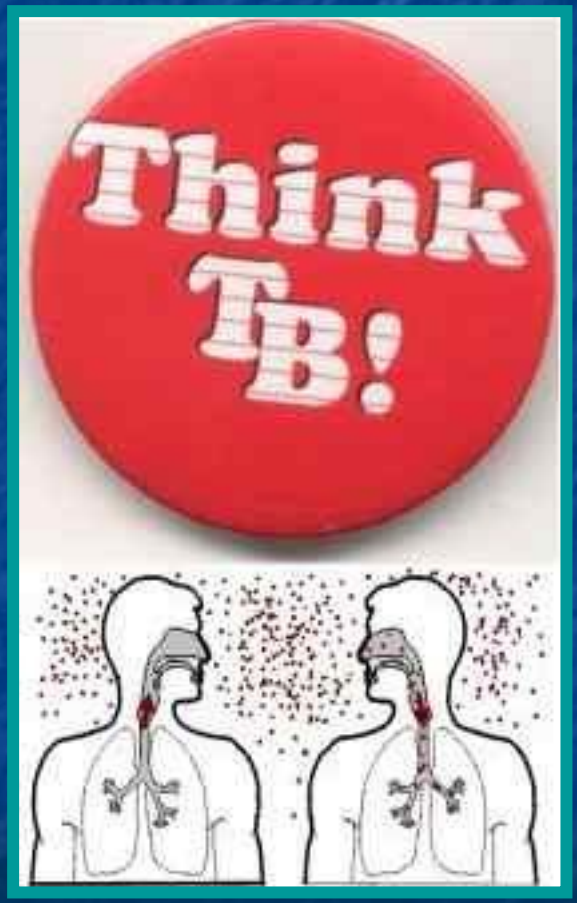
- Regulated medical waste (unless returned to the patient)
- Do not dispose extracted teeth containing amalgam in regulated medical waste intended for incineration

Laser Safety

- Use standard precautions when working in the area of the laser
- Wear appropriate PPE including N-95 or N-100 respirators
- Wear protective laser eyewear
- Implement local exhaust ventilation controls

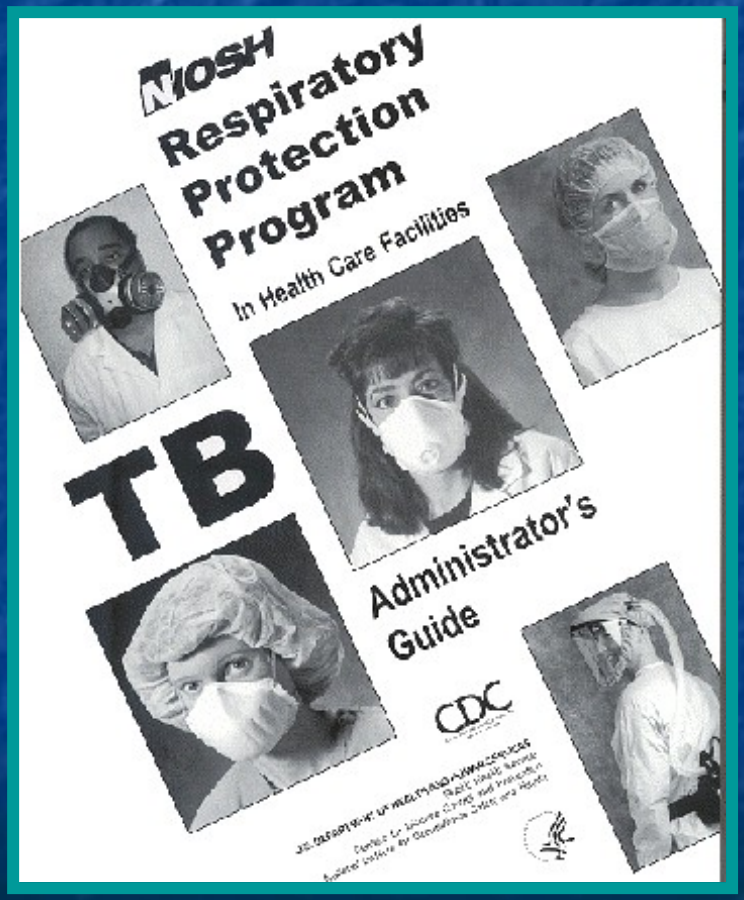
Tuberculosis

- Assess all patients for history of tuberculosis
  - Most common symptom=persistent/productive cough
- Defer elective dental treatment until noninfectious



Tuberculosis

- If patient must be treated:
  - Separate from other patients (have them wear a mask)
  - Refer to area/facility with proper air handling
  - Staff to wear fit-tested N-95 mask



Oral Surgical Procedures

- Incision, excision, or reflection of tissue that exposes normally sterile areas of the oral cavity
- Examples include: biopsy, periodontal surgery, implant surgery, apical surgery, & surgical extractions of teeth

Oral Surgical Procedures

Surgical hand antisepsis

Sterile surgeon’s gloves

Sterile irrigating solution

Oral Surgical Procedures

- Conventional dental units cannot reliably deliver sterile water even with an independent water reservoir
- Use a sterile irrigating syringe, sterile single-use disposable tubing, or sterilizable tubing

Preprocedural Mouth Rinses

- Reduce the level of oral microorganisms in aerosols & spatter
- May be most useful before procedures using a prophy cup or ultrasonic scaler or before surgical procedures

Single-Use (Disposable) Devices

- Use single-use devices for one patient only and dispose of appropriately
- Do not clean & sterilize for reuse

Summary

- Effective infection-control strategies are designed to prevent disease transmission & must occur as routine components of practice.
- Proper procedures can prevent transmission of infections to patients and DHCP.

References

- CDC. Guidelines for infection control in dental health-care settings – 2003. MMWR 2003; 52(No. RR-17):1–66. Available at www.cdc.gov/oralhealth/infectioncontrol.
- USAF Guidelines for Infection Control in Dentistry, September 2004. Available at www.brooks.af.mil/dis/infcontrol.htm.

Questions

Contact Lt Col Harte

jaharte@nidbr.med.navy.mil

DSN 792-7668